

TEMPERATURE OF WATER.

The maximum and minimum temperatures at the bottom of the water are given in the table on chart No. II. The highest maxima are: 71° at Mobile, 68° at Charleston, 67° at St. Marks, 65° at Montgomery, and 63° at Augusta, Nashville and Wilmington. The lowest minima are: 29° at La Crosse, 32° at Escanaba, St. Louis and Yankton, and 33° at Alpena, Keokuk and St. Paul.

Ranges of water temperatures.—The largest ranges: St. Louis, 28°; Memphis, 21°; Nashville, 20°; La Crosse and Louisville, 19°; Cincinnati and Keokuk, 17°. The smallest range: Eastport, 5°; Portland, Me., 6°; Duluth and St. Marks, 7°; Baltimore, Burlington, Knoxville, Marquette and New London, 8°.

ATMOSPHERIC ELECTRICITY.

Thunder-storms have occurred as follows: on the 1st, in N. Y., Texas, Kan., Mass., Mo., 2d, N. Y., S. C., Tenn., 3d, N. C., 5th, Ind., Ky., Mo., 6th, Ga., Ill., N. Y., N. C., Tenn., 7th, N. J., N. Y., 14th, Kan., 18th, Penn., 19th, N. C., 20th, Del., Va.

Auroras were observed on the 9th at Alpena and Escanaba, Mich. 10th, Pembina, Dak.; Grand Rapids, Northport and Alpena, Mich.; Duluth, Minn.; Embarrass, Rocky Run and Le Roy, Wis. 12th, Ft. Sully, Dak.; Cornish and Standish, Me.; Boston, Mass.; North Argyle, N. Y. 13th, Waltham, Mass.; Auburn, N. H. 17th, Brookhaven, N. Y. The aurora of the 12th was also observed from the schooner *Addie Fuller* in 41° 14', N.; 71° 10', W., or near Cape Cod.

OPTICAL PHENOMENA.

Solar Halos are noted as follows: 1st, in Ill., Fla., Me., N. Y., Ohio, Tenn. 2d, N. Y., N. H., N. C., 4th, Ohio, 5th, S. C., Mich., Pa., Ohio, Tenn. 6th, Ill., Me., Mass., N. H., Tenn., Vt. 7th, S. C., Iowa, Neb., 8th, Texas. 9th, Mich., Tenn. 10th, Tenn. 11th, Texas, N. C., Tenn. 12th, Iowa, Ind., Ty., Ill., Mich., Wis. 13th, S. C., Dak., Ga. 14th, S. C., N. C., Wis. 17th, N. Y., Me., N. H. 18th, Me., N. H. 21st, Wyo., Ky. 22d, Ill., Iowa, Kan., Neb. 23d, Ga., N. C., Tenn. 24th, S. C., N. C., Ga. 26th, Me., N. H., Tenn., Vt. 27th, Minn., N. Y., Dak., Neb., N. H., Ohio. 28th, Mo., N. H., Ohio. 29th Ind., Neb., Ohio. 30th, Dak., N. Y., Ill., Ind., Iowa., Neb., N. H., Penn.

Lunar Halos were observed on the 1st in Ga., Ohio, Ill., Minn., Penn., Ind., Tenn., Ky., Ala., Fla., Utah, Dak., N. J., Va. 2nd, N. J., Mich., Tenn., Conn., R. I., Va., N. C., W. Va., Del., Ga., N. Y., Ohio, Penn. 3rd, N. C., Mo., Ga., Tenn. 4th, N. J., S. C., Ala., N. C., Col., Ga., Ohio. 5th, Mich., Md., N. Y., Penn., R. I., N. C., N. J., Mo., Ohio, Tenn. 6th, Fla., N. Y. 7th, Tenn., 8th, Mo. 10th, Vt. 19th, La. 20th, Mo. 21st, Neb., Iowa., W. Va. 22nd, Ind., Wis., Mo., Fla., Ill. 23rd, Iowa, Mo., Miss., Neb., N. J., Tenn. 24th, S. C., Iowa., Tenn., Va. N. C., Mo., N. J. 25th, Ind., Ty., R. I., Neb., N. C., Minn., Iowa, Mass., Mo. 26th, Ga., Ill., Va., N. Y., Ala., Tenn., Penn., N. C., Minn., Mass., Ohio, Me., Mich., Neh., N. H. 27th, Me., N. Y., N. J., Va., Ky., Ala., Mo., Ind., Iowa, Neb., N. H. 28th, N. J., Ohio, Iowa, Ind., Wis., W. Va., N. Y., Ga., Minn., Md., Penn. 29th, Iowa, Md., N. Y., Ohio., Mich., Me., W. Va., Ala., Penn., N. J., D. C., Fla., Ind., Wis. 30th, N. J., Md., Ohio, Mich., Texas, Wis., Ala., Conn., R. I., N. Y., Penn., Fla., N. C., Mass., D. C., Del., Ill., Ind., Iowa, Minn., Neb.

Mirage was observed on the 7th at Sedgewick, Kan. 16th and 28th, Breckenridge, Minn.

MISCELLANEOUS PHENOMENA.

Zoological.—*Wild Geese* were seen at West Point, N. Y., flying S., 16th; St. Meinrad, Ind., SW., 16th; Leesburgh, Ind., E., 8th; Ft. Madison, Iowa, N., 14th and 20th, S., 6th, E., 30th; Owings Mills, Md., N., 25th; Fall River, Mass., SW., 17th; Waltham, Mass., SW., 15th; Clear Creek, Neb., were plenty 7th, nearly all has left by 16th; Carson City, Nev., S., 3d; Vineland, N. J., S., 8th; Ardenia, N. Y., S., 18th to 25th; Kensico, N. Y., SW., 12th; Hector, N. Y., S., 15th and 16th; Flushing, N. Y., S., 15th; Carthagena, Ohio, N., 15th; Ephrata, Penn., S., 29th; Melissa, Texas, were flying around 28th; Strafford, Vt., S., 15th; Embarrass, Wis., S., 1st; Atlantic City, N. J., S., 16th and 21st; Cincinnati, Ohio, S., 22d; Cairo, Ill., S., 27th; Davenport, Iowa, S., 4th and 5th; Keokuk, Iowa, S., 26th; Malone, N. Y., S., 21st; Pittsburgh, Pa., SW., 9th; Springfield, Mass., S., 14th and 18th; Washington, D. C., S., 7th. *Wild Ducks* were seen at Davenport, Iowa, flying S., 3d, 4th, 5th, 25th, 26th, 27th, and 28th; Clear Creek, Neb., S., 5th; Wappinger's Falls, N. Y., E., 15th and S., 28th; Ephrata, Pa., W., 14th; Courting, Mo., were flying about daily. *Sand Hill Cranes* were seen at Ft. Madison, Iowa, 7th. *Blackbirds* were seen at Jacksonsburg, Ohio, flying S. 24th. *Robins* last seen at Webster City, Iowa, 1st. *Phoebebird* last seen at Waltham, Mass., 16th. *Ground Sparrows* last heard at Contoocookville, N. H., 3d. *Yellowbird* last heard at Contoocookville, N. H., 23d. *Grasshoppers*: in Texas a dense cloud of grasshoppers appeared during the last ten days of November; at Vevay, Ind., a remarkable shower of grasshoppers on the 13th; at Baxter Springs, Kan., grasshoppers were killed on the 14th by the snow-fall; at Cincinnati, Ohio, large grasshoppers alighting on the 14th.

Polar Bands were reported as having been seen on the 1st at Carthagena, Ohio; 3rd, Boonsboro, Iowa 5th, Wytheville, W. Va.; 6th, Danville, Ky.; 7th, Iowa City, Iowa; 8th, Boonsboro, Iowa; 11th, Danville, Ky., Carthagena, Ohio, and Iowa City, Iowa; 12th, Carthagena, Ohio; 14th, Freehold, N. J.; 22nd, Iowa City, Iowa; 24th, Bennettsville, Ky., and Wytheville, W. Va.; 27th, Danville, Ky.; 28th, Freehold, N. J.; 29th, Carthagena, Ohio.

Zodiacal light--16th, Nashville, Tenn.; 24th, Atco, N. J.

Meteors have been observed as follows: 1st, in N. Y.; 3rd, Mass., N. Y.; 4th, N. H.; 5th, Col., Miss., N. C., Ohio, Penn., W. Va., Wy.; 6th, Ind., Mass.; 7th, Fla.; 8th, N. C.; 9th, Ill., Iowa, Mo., N. J., Penn.; 10th, Ill., Iowa, Md., Mo., Ohio; 11th, Ind., Iowa, Md., N. J., N. C., Ohio, Penn.; 12th, Fla., Ind., Mass., N. Y., Ohio, Penn.; 13th, N. C., Penn.; 14th, D. C., Minn.; 15th, Fla., Iowa; 16th, N. J., N. Y.; 19th, Neb.; 20th, N. C.; 21st, N. Y.; 22nd, Fla., N. J.; 27th, Md., Wis.; 28th, Ohio; 29th, Md., Penn.; 30th, Mass., N. J.

Forest and Prairie Fires.—Breckenridge, 2nd and 10th; Pembina, 10th; Bennettsville, Ky., 11th.

Earthquakes.—An earthquake shock was felt at Eastport, Me., at 1 p. m., of the 20th.

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Brig. Gen. (Bvt. Assg'd.) Chief Signal Officer, U. S. A.

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